

- 21 -

WHAT IS CLAIMED IS:

1. A method for connecting at least a semiconductor unit to at least a device carrier wherein said semiconductor unit includes at least an electrode and said device carrier includes a metal surface, said method comprising:
 - 5 forming at least a bump of a first type, the bump of said first type jutting out from the electrode of said semiconductor unit and having a first melting point;
 - forming at least a bump of a second type, the bump of said second type jutting out from said metal surface and having a second melting point higher than said first melting point;
 - 10 arranging said semiconductor unit and said device carrier in such a way that the bump of said first type and the bump of said second type face and approach each other;
 - providing heat until the bump of said first type reaches a temperature at least equal to said first melting point, while the bump of said second type remains at a temperature lower than said second melting point; and
 - 15 letting the bump of said first type melt for the bump of said second type to approach the electrode of said semiconductor unit until the bump of said second type has one end on the electrode of said semiconductor unit.
2. The method according to claim 1 wherein said device carrier is a lead
20 frame.
3. The method according to claim 1 further comprising letting the melted bump of said first type flow to surround the bump of said second type and to reach a first end of the bump of said second type, wherein the first end of the bump of said
25 second type is on said metal surface, thereby said semiconductor unit connects said device carrier via the bump jutting out from said metal surface which is free from requiring mechanism thereon for limiting solder flowing of the melted bump.

- 22 -

4. The method according to claim 1 further comprising letting the distance between said metal surface and the electrode of said semiconductor unit be determined according to the size of the bump of said second type.

5 5. The method according to claim 4 wherein the bump of said second type juts out from said metal surface for a height, and the distance between the electrode of said semiconductor unit and said metal surface is determined by said height.

6. The method according to claim 1 wherein the bump of said second type
10 is formed by stencil printing.

7. The method according to claim 1 wherein the bump of said second type is formed by plating.

15 8. The method according to claim 1 further comprising letting the solder wettability between the melted bump of said first type and the bump of said second type be controlled by the bump of said second type, thereby the melted bump of said first type surrounds and adheres to the bump of said second type instead of spreading onto said metal surface.

20

9. The method according to claim 1 wherein the bump of said first type is fully melted for the bump of said second type to contact the electrode of said semiconductor unit.

25 10. The method according to claim 1 wherein the bump of said first type is an alloy including more tin than lead while the bump of said second type is an alloy including more lead than tin.

- 23 -

11. A method for connecting at least a semiconductor unit to at least a device carrier wherein said semiconductor unit includes at least an electrode and said device carrier is enclosed by a metal surface, said method comprising:

- 5 forming at least a bump of a first type, the bump of said first type jutting out from the electrode of said semiconductor unit and having a first melting point;
- forming at least a bump of a second type, the bump of said second type jutting out from said metal surface and having a second melting point higher than said first melting point;
- 10 arranging said semiconductor unit and said device carrier in such a way that the bump of said first type and the bump of said second type contact each other;
- providing heat until the bump of said first type reaches a temperature at least equal to said first melting point, while the bump of said second type remains at a temperature lower than said second melting point; and
- 15 letting the bump of said first type melt for the bump of said second type to approach the electrode of said semiconductor unit until the bump of said second type contacts the electrode of said semiconductor unit, thereby said semiconductor unit connects said device carrier via the bump jutting out from said metal surface which is free from requiring mechanism thereon for limiting solder flowing of melted metal.

- 20 12. An electronic package comprising:
- a device carrier including a metal surface;
- at least a semiconductor unit including at least an electrode; and
- at least an interconnection portion including a first part and a second part, said first part having one end on said metal surface and another end on said semiconductor
- 25 unit, said second part having one end on said metal surface and another end on the electrode of said semiconductor unit, said first part having a melting point lower than that of said second part and surrounding and adhering to said second part.

- 24 -

13. The electronic package according to claim 12 wherein said interconnection portion electrically connects said metal surface and said semiconductor unit.

5

14. The electronic package according to claim 12 wherein said interconnection portion mechanically connects said device carrier and said semiconductor unit.

10

15. The electronic package according to claim 12 wherein said first part contains more tin than lead, while said second part contains more lead than tin.

16. The electronic package according to claim 12 wherein said device carrier is a lead frame.

15

17. The electronic package according to claim 12 wherein said device carrier is a lead frame including an inner lead enclosed by said metal surface.

18. The electronic package according to claim 12 wherein said second part contains materials for controlling the solder wettability between said first part and said second part in case said first part is in a fluid state.

20

19. The electronic package according to claim 12 wherein said first part contains materials for the solder wettability between said first part and said second part be controlled by said second part in case said first part is in a fluid state.

25

- 25 -

20. The electronic package according to claim 12 wherein said another end of said first part partially contacts the electrode of said semiconductor unit and partially contacts an area which is part of said semiconductor unit and which surrounds the electrode of said semiconductor unit.